

Borehole

# 22-00-04

Log Event A

## Borehole Information

Farm : <u>BY</u>	Tank : <u>BY</u>	Site Number : <u>299-E33-241</u>
N-Coord : <u>46,038</u>	W-Coord : <u>53,202</u>	TOC Elevation : <u>648.74</u>
Water Level, ft :	Date Drilled : <u>12/12/1973</u>	

## Casing Record

Type : <u>Steel-welded</u>	Thickness : <u>0.280</u>	ID, in. : <u>6</u>
Top Depth, ft. : <u>0</u>	Bottom Depth, ft. : <u>100</u>	

## Borehole Notes:

The drilling log for borehole 22-00-04 indicates the borehole was not perforated, cemented, or modified significantly.

## Equipment Information

Logging System : <u>1</u>	Detector Type : <u>HPGe</u>	Detector Efficiency: <u>35.0 %</u>
Calibration Date : <u>03/1995</u>	Calibration Reference : <u>GJPO-HAN-1</u>	Logging Procedure : <u>P-GJPO-1783</u>

## Log Run Information

Log Run Number : <u>1</u>	Log Run Date : <u>8/1/1995</u>	Logging Engineer: <u>Bob Spatz</u>
Start Depth, ft.: <u>0.0</u>	Counting Time, sec.: <u>100</u>	L/R : <u>L</u> Shield : <u>N</u>
Finish Depth, ft. : <u>2.5</u>	MSA Interval, ft. : <u>0.5</u>	Log Speed, ft/min.: <u>n/a</u>

Log Run Number : <u>2</u>	Log Run Date : <u>8/2/1995</u>	Logging Engineer: <u>Bob Spatz</u>
Start Depth, ft.: <u>99.0</u>	Counting Time, sec.: <u>100</u>	L/R : <u>L</u> Shield : <u>N</u>
Finish Depth, ft. : <u>1.5</u>	MSA Interval, ft. : <u>0.5</u>	Log Speed, ft/min.: <u>n/a</u>



Spectral Gamma-Ray Borehole  
Log Data Report

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Log Event A

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### Analysis Information

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Analyst : P.D. Henwood

Data Processing Reference : P-GJPO-1787

Analysis Date : 1/23/1996

#### Analysis Notes :

This borehole was logged in two log runs. The pre- and post-survey field verification spectra showed consistent activities, indicating the logging system operated properly during data collection. Energy calibrations differed because of gain drift in the instrumentation. Gain drifts during data collection necessitated energy versus channel number recalibrations during processing of the data to maintain proper peak identification. A depth overlap, where data was collected on separate days at the same depth, occurred in this borehole at 2 ft. The calculated concentrations were within the statistical uncertainty of the measurements, indicating very good repeatability.

The casing thickness is 5/16 (0.3125) inch. Casing correction factors for a 0.33-in.-thick steel casing were applied during analysis, which results in an almost negligible over-estimation of the radionuclide concentrations.

Cs-137 and Co-60 were the only man-made radionuclides identified in this borehole by the SGLS. Cs-137 was measured continuously from ground surface to 33 ft, intermittently from 33 to 95 ft, and continuously near the bottom of the borehole. Co-60 was measured intermittently below 55 ft, and continuously from about 78 to 86 ft. Historical gross gamma logs indicate elevated gross gamma count rates from about 55 to 90 ft. These elevated readings that decreased in intensity through time may be the result of the existence of radionuclide(s) with relatively short half-lives, such as Co-60 and/or Ru-106.

Additional information and interpretations of log data are included in the main body of the Tank Summary Data Report for tank BY-102.

#### Log Plot Notes:

Separate log plots show the man-made (e.g., Cs-137 and Co-60) and the naturally occurring radionuclides (K-40, U-238, and Th-232). The natural radionuclides can be used for lithology interpretations. The headings of the plots identify the specific gamma rays used to calculate the concentrations.

A combination plot includes both the man-made and natural radionuclides, in addition to the total gamma derived from the spectral data and the Westinghouse Hanford Company (WHC) Tank Farms gross gamma log. The gross gamma plot displays the latest available digital data from WHC with no attempt to adjust the depths to coincide with the SGLS data. Selected historical (1980-1991) gross gamma logs are included on a separate plot to document a decrease in count rate over time.

Uncertainty bars on the plots show the statistical uncertainties for the measurements as 95-percent confidence intervals. Open circles on the plots give the minimum detection level (MDL). The MDL of a radionuclide represents the lowest concentration at which positive identification of a gamma-ray peak is statistically defensible.